## AMENDMENTS TO THE CLAIMS

1. (currently amended) A compact, hydrogen generator comprising:

a shell having an inlet port, an outlet port and a conduit between the inlet port and the outlet port having a diameter;

a reformer in the conduit adapted to convert ~~for converting~~ a fuel ~~and either steam or steam and oxygen~~ into a reformate ~~containing~~ comprising hydrogen and carbon oxides;

a ~~downstream~~ shift reactor in the conduit downstream of the reformer spaced by a distance less than about three times the diameter having at least one catalyst stage adapted to convert ~~for converting~~ carbon monoxide in the reformate ~~with water~~ to carbon dioxide and hydrogen;

~~, said shift reactor having at least one catalyst stage; a conduit from the reformer and encompassing the shift reactor for passing the reformate from the reformer through the shift reactor; and~~

a heat exchanger/distributor ~~within~~ in the conduit ~~for~~ adapted to cool [ing] and inject steam into the reformate ~~, said heat exchanger/distributor~~ comprising:

(a) an indirect heat exchanger comprising a coiled tube in the conduit adapted to receive [d] liquid water, ~~and having sufficient surface area~~ to vaporize the ~~received~~ liquid water to steam, and ~~adapted~~ to cool the reformate in the conduit,

(b) ~~at least one~~ a separator ~~in fluid communication with the indirect heat exchanger~~ comprising a riser in the conduit attached to the coiled tube adapted to receive steam from the coiled tube ~~indirect heat exchanger~~ and to remove substantially all liquid water therefrom, and

(c) ~~at least one~~ a steam distributor attached to the riser having an opening in fluid communication with the ~~separator~~ riser adapted to pass ~~the~~ steam into the ~~reformate~~ conduit.

2. (currently amended) The hydrogen generator of claim 1 ~~in which the generator further comprises an~~ further comprising a second ~~indirect~~ heat exchanger/distributor in the conduit substantially identical in construction to the heat exchanger/distributor.

~~for heat exchange with reformate in the conduit.~~

3. (currently amended) The hydrogen generator of claim 2 ~~in which~~ wherein the second ~~indirect~~ heat exchanger /distributor is positioned upstream of the first heat exchanger/distributor.

4. (currently amended) The hydrogen generator of claim 1 ~~in which~~ wherein the heat exchanger/distributor comprises a plurality of steam distributors on the riser in fluid communication with the riser.
~~at least one separator is a riser~~.

5. (currently amended) The hydrogen generator of claim 1 ~~in which~~ wherein the heat exchanger/distributor comprises ~~at least 4~~ a plurality of steam distributors comprising arms attached to the riser.

6. (currently amended) The hydrogen generator of claim 1 ~~in which~~ wherein the heat exchanger/distributor is located between the reformer and the ~~water gas~~ shift reactor.

. 7. (currently amended) The hydrogen generator of claim 1 ~~in which~~ wherein the ~~water gas~~ shift reactor comprises at least two catalyst stages and the heat exchanger/distributor is located between the two catalyst stages

Claims 8-20 (canceled)

21. (new) The hydrogen generator of claim 1 wherein the coiled tube has a surface area sufficient to vaporize essentially all of the liquid water in the coiled tube to steam.

22. (new) The hydrogen generator of claim 1 further comprising an indirect heat exchanger surrounding the conduit, and a second heat exchanger/distributor between the reformer and the shifter reactor.

23. (new) A hydrogen generator comprising:

a shell having an inlet port adapted to receive a fuel, an outlet port and a conduit between the inlet port and the outlet port;

a reformer in the conduit adapted to convert the fuel into a reformate comprising hydrogen and carbon oxides;

an indirect heat exchanger surrounding the conduit adapted to cool the reformate;

a first indirect heat exchanger/distributor in the conduit adapted to cool and inject steam into the reformate;

a shift reactor in the conduit downstream of the reformer having a first catalyst stage and a second catalyst stage adapted to convert carbon monoxide in the reformate to carbon dioxide and hydrogen; and

a second heat exchanger/distributor in the conduit between the first catalyst stage and the second catalyst stage adapted to cool and inject steam into the reformate;

each heat exchanger/distributor comprising a coiled tube in the conduit adapted to receive liquid water and to vaporize essentially all of the liquid water to steam, a separator in fluid communication with the coiled tube configured to separate any remaining water, and a distributor having an opening in fluid communication with the riser configured to pass steam into the conduit.

24. (new) The hydrogen generator of claim 23 wherein the shell has a diameter and the shift reactor is spaced from the reformer by within about three diameters.

25. (new) The hydrogen generator of claim 23 wherein the separator comprises a riser and the distributor comprises a plurality of arms attached to the riser.